

# **Video Capture Pro**

# v2.3.5

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# 1. Overview

**Video Capture** is a plugin that enables you, the Unity developer, to capture video and audio from your Unity application. It's great for recording video trailers, demos and in-app footage for your Unity-based game or app. It's fast, flexible and easy to use. When the video is recorded, you will decide how it's handled. Give your users complete freedom to share it, restrict it to playback from within your app, or anything in between.

When you import Video Capture plugin into your Unity project, the following assets will be added:

<b>V v</b>		Eve	ereal	NEW
	<ul> <li>✓</li> </ul>		VideoCapture	NEW
	►	~	Editor	NEW
		~	Plugins	NEW
			FFmpegEncoder.bundle	NEW
			✓ <b>■</b> x86	NEW
			✓ <b>■</b> x86_64	NEW
		~	= README.txt	NEW
	►	~	Resources	NEW
		~	Scenes Scenes	NEW
			Demo_01_FromCamera.unity	NEW
			Demo_02_FromScreen.unity	NEW
			Demo_03_FromRenderTexture.unity	NEW
			✓	NEW
			Demo_05_SequenceImages.unity	NEW
			Demo_06_Audio.unity	NEW
			Demo_07_StereoLeftRight.unity	NEW
			Demo_08_360Equirectangular.unity	NEW
			Demo_09_360Cubemap.unity	NEW
			Demo_10_OfflineRender.unity	NEW
			Demo_11_MultipleCamera.unity	NEW
			Demo_12_LiveStreaming.unity	NEW
			🖌 🖿 Legacy	NEW
		~	Scripts	NEW
			# AudioCapture.cs	NEW
			Common	NEW
			Demo	NEW
		V	Encoder	NEW
			FFmpegEncoder.cs	NEW
			# FFmpegMuxer.cs	NEW
			# FFmpegStreamer.cs	NEW
			✓ # GPUEncoder.cs	NEW
			Events	NEW
				NEW
			Hotkey	NEW
			# ImageCapture.cs	NEW
				NEW
				NEW
			Legacy Legacy	NEW
			✓ # SequenceCapture.cs	NEW
			✓ # VideoCapture.cs	NEW

# 2. Prepare

**Video Capture** requires **FFmpeg** build, it's a third party, open-source, cross-platform tool that lets you easily convert video formats, and is bundled with Video Capture. You can learn more about FFmpeg through <a href="https://www.ffmpeg.org">https://www.ffmpeg.org</a>. For FFmpeg license information, please visit: <a href="https://ffmpeg.zeranoe.com/builds/">https://www.ffmpeg.org</a>.

Please make sure there are FFmpeg executable files existed in your *StreamingAssets* folder according to your target platform:

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If not exists, you will need download FFmpeg executable files first, you can use the tools we provided to download based on your platform, *Tools -> Evereal -> VideoCapture -> FFmpeg*:

Tools	Window	Help			<b>⊲</b> >)
Eve	ereal 🕨 🕨	VideoCapture	GameObject		Personal (Personal) <metal></metal>
					Collab -
			FFmpeg		Download Windows Build (32 bit)
t Store					Download Windows Build (64 bit)
•	Scale	1x	Maximiz	ze On P	Download macOS Build (64 bit)
					Grant macOS Build Permission

Please make sure you see download complete message output in console:

Download FFmpeg complete! UnityEngine.Debug:Log(Object)

Or you can download the ffmpeg build package from our github repo, then import to your project.

https://github.com/evereal/ffmpeg-executable-for-unity/releases/download/4.2.2/FFmpegExecutable.unitypackage

# **3. Getting Started**

Video Capture comes with several demos to help you to understand the functionality of the plugin quickly. Start by creating a new project and importing all Video Capture package assets including demo scenes files.

*Demo\_01\_FromCamera* recording video with preset camera inside the game.

Demo\_02\_FromScreen is for recording video from the screen directly.

*Demo\_03\_FromRenderTexture* is for recording video from a render texture.

*Demo\_04\_Image* only takes a screenshot of the game.

*Demo\_05\_SequenceImages* takes a sequence of images of the game, you can choose to encode the video later.

*Demo\_06\_Audio* only recording audio inside the game.

Demo\_07\_StereoLeftRight is for recording stereo video with side by side config.

*Demo\_08\_360Equirectangular* recording 360 video with equirectangular project type.

Demo\_09\_360Cubemap recording 360 video with cubemap projection type.

*Demo\_10\_OfflineRender* is recording offline videos, which is very useful for recording the highest quality video but not for performance real time capture.

*Demo\_11\_MultipleCamera* is recording multiple videos simultaneously using different cameras.

*Demo\_12\_LiveStreaming* recording video and publishing to remote streaming service.

Let's get started with the first demo which demonstrates basic video record functionality with a dedicated camera:



**Step 1**: Open the *Demo\_01\_FromCamera* scene located in *Assets/Evereal/VideoCapture/Demos/Scenes/*:



Step 2: Play in the editor, click Start Capture button:



**Step 3**: Wait for a few seconds (depending upon how long you want to record), and then click *Stop Capture* button:



Step 4: Click the Open Save Folder check out the video you just recorded.



There are a few more demos you can try and play, and there will be more demo scenes coming in the future...

# 4. Main Content

Video Capture plugin is structured properly, you can find source code and do custom modification if you have special requirements.

# **4.1 File Directory**

File Directory	Description
Evereal/VideoCapture/ Demos/Scenes	Contains the scene file and all other assets for a fully functional demo of Video Capture plugin.
Evereal/VideoCapture/ Scripts/Editor	Contains helper scripts and resources used in the Unity Editor and Inspector window.
Evereal/VideoCapture/ Plugins	Contains the platform-dependent native library for Video Capture plugin.
Evereal/VideoCapture/ Resources/Shaders	Shaders used for video processing, such as panorama video stitch.
Evereal/VideoCapture/ Resources/Prefabs	Contains useful prefabs can be dragged and dropped into your scene.
Evereal/VideoCapture/ Scripts	Contains all script files for Video Capture plugin, the main script you will use is VideoCapture.cs.
StreamingAssets/ Evereal/FFmpeg	Contains the FFmpeg binaries for Windows and macOS. If you are only building for one target platform, you can exclude the file you don't need.

# 4.2 Core Scripts

Script	Description
VideoCapture.cs	This is the main script used to control and manage the <i>FFmpegEncoder</i> and <i>GPUEncoder</i> module which is used to encoding desired videos.
AudioCapture.cs	This script is only used to record audio files.
ImageCapture.cs	This script can help take a screenshot of the game.
SequenceCapture.cs	This script can capture a sequence of images, you can generate high quality video with captured image sequence.
VideoCaptureManager.cs	This script can help you quickly set up more than one

	VideoCapture in the scene and capture multiple videos simultaneously.
FFmpegEncoder.cs	This core script used to gather texture frames from Unity and encode to the video files by FFmpeg.
GPUEncoder.cs	This core script used to gather texture frames from Unity and encode to the video files by graphics card.
FFmpegMuxer.cs	This core script used to gather audio samples from Unity, encode to the audio files and mux with video files.
FFmpegStreamer.cs	This core script used to publish captured flv to remote rtmp live stream service.

# **5. Integration**

The integration process of Video Capture is extremely easy.

## 5.1 Integrate with VideoCapture

**Step 1:** Drag and drop the *VideoCapture* prefab into your game scene, then adjust the prefab position and rotation according to your capture requirements.

Step 2: Configuring *VideoCapture* component's properties based on your requirement.

#### **Basic Settings:**

🔻 🌃 🗹 Video Capture (Scri	pt) Ø⊢ :
Capture Control	
Start On Awake	
Capture Options	
Capture Source	CAMERA 🔻
Capture Type	VOD 👻
Save Folder	Captures
Capture Mode	REGULAR
Stereo Mode	NONE
Capture Audio	$\checkmark$
Capture Microphone	
Offline Render	
Video Settings	
Resolution Preset	CUSTOM
Frame Width	1280
Frame Height	720
Bitrate (Kbps)	2000
Frame Rate	30
Anti Aliasing	1

*Video Capture Type* - You can set the type as *VOD* for local video capture, the *LIVE* mode is for live streaming.

*Save Folder* - Set the folder which will be used to save the recorded videos, default will be the *Capture* folder in your unity project.

Capture Audio - Check when you want to record audio with the output video.

*Offline Render* - The capture session will be in offline mode, and you can record the highest quality video in this mode but sacrifice the performance.

*Resolution Preset* - The resolution of recorded video, the higher size set, the better video quality. The better quality costs more in terms of machine performance.

Available sizes are:

- 720 x 480
- 1280 x 720
- 1920 x 1080
- 2048 x 1024
- 2560 x 1280
- 2560 x 1440
- 3840 x 1920
- 3840 x 2160
- 4096 x 2048
- 4096 x 2160
- 7680 x 3840
- 7680 x 4320

*Frame Width* - If you set the *Resolution Preset* to *CUSTOM*, you can set the custom target video frame width for output video.

*Frame Height* - If you set the *Resolution Preset* to *CUSTOM*, you can set the custom target video frame height for output video.

*Bitrate (in Kbps)* - Set the bitrate for output video, generally high quality video requires more bitrate. For more details, please visit

https://help.encoding.com/knowledge-base/article/understanding-bitrates-in-video-files/

*Frame Rate* - Set the target frame rate for recorded video. To avoid performance loss, use a lower target frame rate for output video.

*Anti-Aliasing* - Set the anti-aliasing factor for frame captured, higher anti-aliasing will increase video quality.

#### **Encoder Settings:**

Encoder Preset	H264_MP4	•
GPU Encoding		

*Encoder Preset* - Config the video codec preset, currently support H.264, H.265, FFV1, VP8, VP9

*GPU Encoding* - GPU encoder can gain more performance by taking advantage of using dedicated graphic card hardware, but only H.264 available now for this option.

Please note GPU Encoding option is only available in Windows platform.

#### Stereo Video Settings:

Stereo Mode	LEFT_RIGHT \$	
Interpupillary Distance	0.0635	

Stereo Mode - Set stereo mode for video capture, TOP\_BOTTOM or LEFT\_RIGHT.

The set resolution will be used for the whole stereo video, for example, if you set the resolution as  $2560 \times 1280$  and stereo mode as *LEFT\_RIGHT*, each mono video will be 1280 x 1280.

*Interpupillary Distance* - Set the distance between stereo eyes. For more details, please visit <u>https://en.wikipedia.org/wiki/Pupillary\_distance</u>

#### 360 Video Properties:

Capture Mode	360	\$
Projection Type	EQUIRECT	\$
Cubemap Face Size	1024	\$

Capture Mode - Set as 360 for 360 video capture.

*Projection Type* - Currently you can choose *EQUIRECT* or *CUBEMAP*, most video platforms support equirectangular format, like Youtube, Vimeo, etc. However, cubemap format can reduce bitrate for generated video.

*Cubemap Face Size* - Square pixel size of frames captured by each direction camera. You can increase the size for better quality video but will consume more performance.

**Step 3**: Start the video capture function by code, *VideoCapture* provide API to start or stop video recording, you can call those functions according to your requirements:



After all setup, you should be able to start capturing your fantastic game!

## 5.2 Integrate with AudioCapture

Step 1: Drag and drop the *AudioCapture* prefab into your game scene.

Step 2: Configuring AudioCapture component's properties based on your requirement.

🔻 饠 🗹 Audio Capture (Script)	0	- <del>  </del> -	:
Capture Control			
Start On Awake			
Capture Options			
Save Folder			
Capture Microphone			

*Save Folder* - Set the folder which will be used to save the recorded videos, default will be the *Capture* folder in your unity project.

**Step 3**: Start the audio capture function by code, *AudioCapture* provide API to start or stop audio recording, you can call those functions according to your requirements:



## 5.3 Capture with multiple cameras simultaneously

**Step 1:** Create an empty game object in your scene, and attach the *VideoCaptureManager* script.

**Step 2**: Drag and drop multiple *VideoCapture* prefabs into your game scene, then adjust the prefabs position and rotation according to your capture requirements.

**Step 3**: Set *VideoCaptureManager* video captures field's size to the count of your added *VideoCapture* prefabs (3 in this example). Then attach the added *VideoCapture* prefabs object into *VideoCaptureManager* video captures fields one by one.



**Step 4**: Configuring *VideoCaptureManager* component's properties based on your requirement. This will basically be the same as *VideoCapture*, but will be used for all added *VideoCapture*. (Please refer to *6.1 Integrate with VideoCapture*)

🔻 饠 🛛 Video Capture Manager (S	cript)		•
Capture Control			
Start On Awake			
Capture Options			
Save Folder			
Capture Mode	REGULAR		•
Stereo Mode	NONE	•	•
Capture Audio	✓		
Capture Microphone			
Offline Render			
Video Settings			
Resolution Preset	1280x720		•
Frame Rate	24		
Anti Aliasing	1		•
Encoder Settings			
Encoder Preset	H264_MP4		•
Video Capture Components			
▼ Video Captures			
Size	3		
Element 0	🚟 VideoCapture 1 (VideoCapture)	0	0
Element 1	🚟 VideoCapture 2 (VideoCapture)	0	0
Element 2	VideoCapture 3 (VideoCapture)	(	Θ

**Step 5**: Start the multiple video capture simultaneously by code, *VideoCaptureManager* provide API to start or stop video recording, you can call those functions according to your requirements:



# 5.4 Capture video from render texture

Step 1: Drag and drop the *VideoCapture* prefab into your game scene.

Step 2: Configuring VideoCapture component's properties based on your requirement.

Capture Options		
Capture Source	RENDERTEXTURE	•
Render Texture	InputTexture	$\odot$

Capture Source - Set RENDERTEXTURE for render texture capture.

Render Texture - Set the render texture you created for recording.

#### **Render Texture Settings:**

RenderTexture			🔯 🌣,
			Open
Dimension	2D		\$
Size	1280	x 720	
Anti-Aliasing	None		\$

Size - Set the frame width and height for output video.

The rest settings are basically the same as normal *VideoCapture*, you can apply any post processing and encode the texture into the video with post effect in this case.

**Step 3**: Start the video capture function by code, *VideoCapture* provide API to start or stop video recording, you can call those functions according to your requirements:



## 5.5 Capture video from screen

Step 1: Drag and drop the *VideoCapture* prefab into your game scene.

Step 2: Configuring VideoCapture component's properties based on your requirement.

Capture Options	
Capture Source	SCREEN -

Capture Source - Set SCREEN for capture screen.

The rest settings are basically the same as normal *VideoCapture*, you can record game UI or mouse movement with this integration in this case.

**Step 3**: Start the video capture function by code, *VideoCapture* provide API to start or stop video recording, you can call those functions according to your requirements:



After all the setup, you should be able to start capturing screens of your fantastic game!

# 5.6 Integrate with ImageCapture

**Step 1:** Drag and drop the *ImageCapture* prefab into your game scene, then adjust the prefab position and rotation according to your capture requirements.

Step 2: Configuring *ImageCapture* component's properties based on your requirement.

🔻 🌃 🗹 Image Captu	🔻 🌃 🗹 Image Capture (Script)	
Capture Options		
Capture Source	SCREEN	•
Save Folder	Captures	
Capture Cursor		
Image Settings		
Image Format	PNG	•
Anti Aliasing	1	•

Image Format - You can set PNG or JPG for your requirement.

**Step 3**: Start take screenshot function by code, *ImageCapture* provide API to start screenshot, you can call those functions according to your requirements:



## 5.7 Integrate with SequenceCapture

**Step 1:** Drag and drop the *SequenceCapture* prefab into your game scene, then adjust the prefab position and rotation according to your capture requirements.

Step 2: Configuring SequenceCapture component's properties based on your requirement.

🔻 鑃 🗹 Sequence Capture (Script)		0	-it-	*
Capture Control				
Start On Awake				
Capture Options				
Capture Source	CAMERA			•
Save Folder	Captures			
Capture Mode	REGULAR			•
Stereo Mode	NONE			•
Image Settings				
Image Format	PNG			•
Resolution Preset	1920x1080			•
Frame Rate	30			

*Image Format* - You can set *PNG* or *JPG* for your requirement.

Frame Rate - Decide how many images will be captured in one second.

**Step 3**: Start the sequence capture function by code, *SequenceCapture* provide API to start or stop sequence capture, you can call those functions according to your requirements:



# 5.8 Live streaming capture to stream service

**Step 1:** Drag and drop the *VideoCapture* prefab into your game scene, then adjust the prefab position and rotation according to your capture requirements.

**Step 2:** Get your remote live stream url, I will take Youtube as an example here (This step will be different if you use other streaming services).



And your live stream url will be **rtmp://x.rtmp.youtube.com/live2/d43a-5qcz-a945-7501** in this case.

**Step 3**: Config live stream url in *VideoCapture* component's inspector, and configuring *VideoCapture* component's properties based on your requirement.

Capture Control Start On Awake		
Capture Options		
Capture Source	CAMERA	•
Capture Type	LIVE	•
Live Stream Url	rtmp://x.rtmp.youtube.com/live2/d43a	-5q

Video Capture Type - Set LIVE mode for live streaming.

Live Stream Url - Input the live stream url you get in the previous step.

**Step 4**: Start the video capture function by code, *VideoCapture* provide API to start or stop video recording, you can call those functions according to your requirements:



Step 5: Make sure the internet is connect and live stream is working:

≡ (	Studio					in the second se	
((=))						Live chat	:
٥			Title Live Stream Test Category		EDIT	Welcome to live chat! Remember to guard your privacy and abide by our community guidelines.	
			Film & Animation				
2	Excellent conne	ction	O O				
	OTDEAM CETTINCO						
	STREAM SETTINGS		·				
	Stream status 🕜	Messages					
	Excellent	9:37 AM Stream is healthy					
		Stream nearth is excellent.					
						e Evercal	
						(200 )	>

## 5.9 Capture with custom camera for post effect

Beside applying post effect by capture from render texture or screen (See **5.4** and **5.5**), you can use your custom camera for capturing directly.

Attach your custom camera and replace the default camera in *VideoCapture* component:



# 5.10 Capture with new scene load

If you include new scene load during capture, you will need to attach the *DontDestroy* script into the *VideoCapture* component.

🕨 🌃 🗹 Video Capt	ure (Script)	0 ≓ :
🕨 # 🗹 Video Capt	🕨 ≢ 🗹 Video Capture Hotkey (Script)	
🕨 # 🗹 Video Capt	ure GUI (Script)	<b>0</b> <del>.</del> ⊢ :
🔻 🚛 🛛 Dont Destre	oy (Script)	<b>0</b> ‡ i
Script	# DontDestroy	o
	Add Component	

This script will help the VideoCapture component stay persistent in game scenes.

Please note, if you enable *Capture Audio* option, the default *Audio Listener* game object will be reset and attached to *VideoCapture* to make sure the audio record feature is persistent in game scenes.

# 6. Pro Version

If you think *Video Capture* is useful for your project, please consider purchase the Proversion, you can purchase the Proversion from the asset store:

https://assetstore.unity.com/packages/tools/video/video-capture-pro-155663

Feature	Free Trial	Pro
Video Capture	$\checkmark$	
Audio Capture	$\checkmark$	
Microphone Record	$\checkmark$	
Stereo Video Capture	$\checkmark$	
360 Video Capture	$\checkmark$	
Cubemap Video Capture	$\checkmark$	
Screen Capture	$\checkmark$	
Image Capture	$\checkmark$	
Sequence Images Capture	$\checkmark$	
Live Streaming	$\checkmark$	
Real-time Capture	$\checkmark$	
Offline Render Capture	$\checkmark$	
Multiple codec support	$\checkmark$	
Remove Watermark		
High-Performance GPU encoding (Windows Only)		

The Pro version can generate 4K 360 videos in real-time. The screenshot below shows the profiler windows between Free version and Pro version to capture 360 videos.

# Statistics Audi:: Level::74.8 Evel::74.8 Stream load: 0.0% Graphics: 18.7 Stream load: 0.0% Graphics: Stream load: 0.0% Stream load: 0.0% Graphics: Stream load: 0.0% Stream load: 0.0% Verts: 4.20k Stream load: 0.0% Stream load: 0.0% Visible shinned meshes: 0.4 minations: 0 Network: (no players connected) Open Video Folder Console Open Video Podiler Add brofiler Add brofiler Open Video Folder Som (GOPPS)

#### Running video capture for recording 360 4K video by Free version (~15 FPS):

Running video capture for recording 360 4K video by Pro version (~60 FPS):

		Sta	tistics
		Audio:	
		Level: -74.8 dB Clipping: 0.0%	DSP load: 0.3% Stream load: 0.0%
		Graphics:	463.1 FPS (2.2ms)
		CPU: main 2.1ms ren Batches: 11 S Tris: 1.8k V Soreen: 1100x350 - 4. SetPass calls: 11 S Visible skinned meshes	der thread 1.2ms aved by batching: 2 erts: 5.3k 4 MB nadow casters: 4 :: 0 Animations: 0
		Network: (no players	connected)
Stop Capture			Open Video Folder
Console OProfiler	Record Deep Profile Profile Editor Editor *	Clear Load Save Frame: Current	+≡ 4 b Current
CPU Usage ×			Â
Rendering     Scripts     Physics     GrbageCollector     VSync     Global Illumination     UI     UI     Others	16ms (60FPS)	whether the basis of the basis	

#### **Test Device Specs**

Operate System: Windows 10

CPU: 2.8GHz Intel Core i7-7700HQ

GPU: Nvidia GeForce GTX 1060

# **7. FAQ**

## Q: What's the Unity version required for the Video Capture plugin?

A: We recommend using Unity 5.6 or newer.

## Q: Can I use multiple cameras for capturing simultaneously?

**A:** Yes, but the more cameras you use, the more resources you cost on your device. In addition, the 360 video record does not support multi-camera recording for now.

#### Q: What are offline render settings?

**A:** If you enable offline render settings, the capture session will only move to the next frame until the current frame record succeeds. It's useful for you to create a smooth video when you capture 360 video or intensive video capture.

#### Q: Does my device support the high performance GPU encoding?

A: GPU encoding is for Windows only and requires a dedicated graphics card.

NVIDIA Quadro, Tesla, GRID or GeForce products with Kepler, Maxwell and Pascal generation GPUs. NVidia Windows display driver: 375.95 or newer.

AMD GPUs supporting the following driver: AMD Radeon Software Crimson 17.1.1 or later.

Windows 7 SP1 or newer.

#### Q: What is the resolution limit for recorded video?

A: Support video resolution is different based on encoding type:

AMD GPU encoding: Up to 4K (4096 x 2048)

NVidia GPU encoding: Up to 4K (4096 x 4096)

Software encoding: Up to 8K (7680 x 4320)

## Q: Why can't I generate a video on macOS?

**A:** If you cannot generate a video on macOS, this may be due to the program having no permission to run FFmpeg. To fix this, please click *Grant macOS Build permission* item in the *VideoCapture* editor menu.

## Q: I am using macOS and Unity 2017, why can't I import the assets?

**A:** The Video Capture Pro asset includes a sample wav audio file. macOS version Unity 2017 has a bug import wav file, exclude the wav audio file then you will import assets successfully.

#### Q: How can I record game UI with Video Capture?

**A:** Please change Capture Source to *SCREEN*, and you can try the demo "Demo\_02\_FromScreen" which will record game UI.

#### Q: I am using Windows, why does the program exit after enable the GPU encoding?

**A:** There might be exceptions during capturing with GPU, please make sure you are using Direct3D11 for Windows Graphic API.

Auto Graphics API for Windows			
Graphics APIs for Windows			
= Direct3D11			
		+.	- [

# 8. Feedback

If you have any feedback on the *Video Capture* plugin, please email us through *dev@evereal.com* directly, your advice will be very valuable to us.

You are also very welcome to rate our plugin and leave your comment on the Unity Asset Store.